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PROCEEDINGS

OF THE

ACADEMY OF NATURAL SCIENCES

OF PHILADELPHIA.

VOL. I. NOV. AND DEC. 1842. NOS. 20, 21.

STATED MEETING, NOVEMBER 1, 1842.

VICE PRESIDENT MORTON in the Chair.

DONATIONS TO LIBRARY.

Report of the Secretary of the Navy in relation to the second invention of Thomas S. Easton for preventing explosions of steam-boilers. From Professor Johnson.

Histoire Naturelle de l' Ile de Cuba. Par M. Ramond de la Sagra. Livs. 38 and 39. From a Club of Members.

WRITTEN COMMUNICATIONS.

A communication was read by the Recording Secretary from Mr. Isaac Lea, dated October 31, 1842, correcting an error committed by Mr. Haldeman in a communication made by the latter to the Academy in May last, and published in its Proceedings, in which he proposed that " the letter *u* should take the place of *w* in Unio Cowperiana of Lea," on the ground of an error in the orthography. Mr. Lea stated that the Unio in question was not named after Mr. J. Hamilton Couper of Georgia, as was probably supposed by Mr. Haldeman, but after Mr. Wm. Cooper of New York. Mr. Lea also objected to any change in the specific name, and also to Mr. Haldeman's proposed alteration of Unio Nashvillianus to U. Nashvicencis, the latter, in his opinion, not being "more classical and correct."

The Corresponding Secretary read a letter from J. Hamilton Couper, Esq. of Darien, Georgia, dated Oct. 6, 1842, acknowledging the receipt of his notice of election as a Correspondent of the Academy; and also transmitting a communication giving a detailed description of the strata, in which the fossil bones and shells from the Brunswick Canal, lately presented by him to the Academy, were found: preceded by a sketch of the geological features of the surrounding country.

The communication was referred to the Committee on Proceedings.

[The length of this interesting paper will preclude its insertion entire in this publication. It will be reserved for the first part of the next volume of the Journal of the Academy. For the present, therefore, the Committee are only enabled to give the following, being the concluding portion of the paper.]

The fossil bones of the terrestrial mammalia* were found in the bed of the canal, at the southern end of this swamp, at six different points, extending up from its junction with the salt marsh to a distance of three miles. In every instance they were found at the bottom of the alluvial deposit, imbedded in it, and lying on the stratum of sand. The first two feet of the alluvial formation is a sandy loam, gradually passing into a compact clay of a ferruginous character, which extends three or four feet deeper. In this stratum of clay thin veins of marl and fragments of petrified wood were found at different depths; but no fossil shells, either of marine or fresh water origin. The stratum of sand on which the bones were found lying, is on an average nearly five feet above spring tides.

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* The most interesting of these bones belong to the Megatherium, the Mastodon giganteum. Elephas primogenius, Hippopotamus, Horse, Bos, and to a nondescript animal, which Dr. Harlan has described as the Sus Americana, in Silliman's Journal, for July, 1842.

About the line of high water the sand changes its colour from yellow to white, and assumes a quicksand character, which it retains for one or two feet, when it is succeeded by a coarser and sharper sand, with the occasional occurrence of thin strata of fœtid black mud or clay. Small masses of marine fossil shells,* lying horizontally, or nearly so, are found scattered at intervals throughout this sandy formation, at almost every point of the canal. The depth varies from five feet above to five feet below the line of high tides,—which is the greatest depth to which the excavation has extended.

The rib and vertebræ of the whale were discovered near the northern extremity of the swamp, in the yellow sand, and about a foot below its surface. They were much worn, and one of the vertebræ was much encrusted with barnacles. At this point bog iron ore and protophosphate of iron were found above the sand containing the marine shells.

The precise spot where the extinct Chelonia (C. Couperi of Harlan) occurred was not ascertained; but there is every probability that it was taken from the same formation.

The bones of the mammalia occurred generally in groups; and in some cases a large number of those of the same skeleton were found together. From this circumstance, and the unworn and perfect state of many of the bones, it is highly probable that the carcasses of the animals were floated, or fell into the then lake or stream, and that, sinking to the sandy bottom, they were gradually covered to their present depth by the deposit of the sediments of the water. Of the species discovered, the remains of the Megatherium and the Mammoth were the most abundant; and of the former, six heads of femurs were found in the bed of the canal within the distance of a mile. All the bones were at the same depth, and imbedded in the same stratum; thus leaving no doubt of their co-existence at a period succeeding the elevation from the ocean of the newer pliocene, but antecedent to the formation of the older recent alluvium of this coast.

The co-existence of the Megatherium with the Mastodon, Mammoth, Hippopotamus, Horse, Ox and Hog, has here, it is believed, been for the first time established; and forms, with the discovery on this continent, of a well defined fossil species of sus, two interesting facts in geology.

The identity of most of the fossil shells which were found below the bones of the mammalia, with the existing species on this coast, proves that the temperature of the ocean, long prior to the existence of the Megatherium, Mammoth, and Hippopotamus, was such as is congenial to the present mollusca. Another inference which may be drawn is, that the surface of the country has undergone no sudden or violent change since these gigantic animals occupied its forests and morasses; but that such as have occurred have been slow and gradual.

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*The following species occur most abundantly:
Venus mercenaria, Pyrula caurica, Cardium ventricosum, Artemis concentrica, Arca pexata, Arca penderosa, Lucina divaricata, Modiola lateralis, Tellina alternata, Mactra lateralis? Oliva literata, Natica duplicata, Crepidula convexa.